



Indicators and methodologies

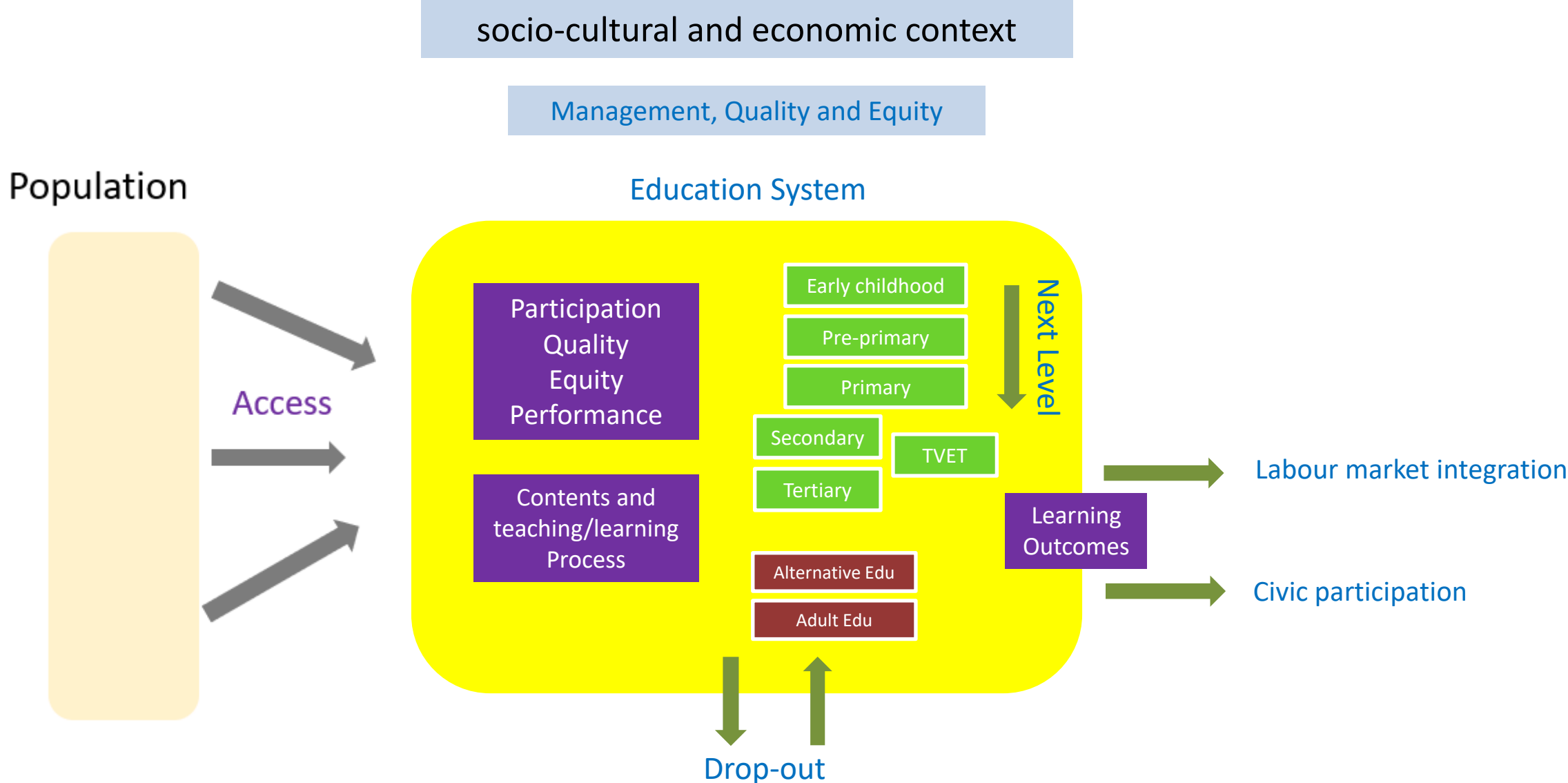
Education indicators framework

Framework: "Education as foundation for the sustainable development"

- Access
- Participation
- Quality
- Equity and Inclusion
- Efficiency
- Management



Foundation for sustainable development



Education Dimensions

	Access	Participation	Completion	Quality	Means of Implementation
Conceptually	Focus on the starting point in a cycle	Focus on the entire duration in a cycle	Focus on the ending point in a cycle	Student Learning Outcomes and skills	Improving school facilities and learning spaces
Technically	Admission / Intake Transition	Enrolment (or attendance)	Completers / intake to the last grade	Minimum Proficiency in reading and math	Proportion of schools with basic facilities, qualified teachers

Indicators presented

- Gross enrolment ratio (GER)
- Net enrolment rate (NER)
- Adjusted net enrolment rate (ANER)
- Total Net Enrolment Rate (TNER)
- Gross Intake Ratio at last grade
- Completion Rate
- Out-of-school rate
- Percentage of over-age students by level
- GER in pre-primary education
- Participation rate in organised learning
- Percentage of youth/adults participating in education and training
- GER in tertiary education
- Participation rate in TVET
- Literacy Rate
- Minimum Qualified teachers

Different Enrolment rate and ratios

Access Indicators	Definition	Data Required
Gross Enrolment Ratio (GER) in primary	Total enrolment in primary level (regardless of age) as % of official primary enrolment age population	<ul style="list-style-type: none"> - Enrolment in primary education - Population of the official primary school age
Net Enrolment Rate (NER) in primary	Total enrolment of official primary age children in primary as % of official primary age population	<ul style="list-style-type: none"> - Enrolment in primary education by single years of age - Population of the official primary school age
Adjusted Net Enrolment Rate (ANER) in primary	Total enrolment of primary age children in primary or lower secondary level as % of official primary age population	<ul style="list-style-type: none"> - Enrolment in primary and secondary education by single years of age - Population of the official primary school age
Total Net Enrolment Rate (TNER) in primary	Total enrolment of primary age children in primary, pre-primary and secondary level as % of official primary age population	<ul style="list-style-type: none"> - Enrolment in primary, pre-primary and secondary education by single years of age - Population of the official primary school age

Different Enrolment rates/ Ratios

	GER	NER	ANER	TNER
Numerator	Total number of pupil enrolled in primary (all ages)	Total number of pupil enrolled in primary of the official primary age	Total number of pupil enrolled in primary and <u>lower secondary level</u> (regardless of grades) of the official primary age	Total number of pupil enrolled in primary, pre-primary and secondary level (regardless of grades) of the official primary age
Denominator	Total number of official primary age population			



All these indicators can also be calculated using household surveys attendance data (attendance rates) in some cases (e. g. India) enrolment as well.

Primary GER, NER, ANER and TNER

Age	Pre-Primary		Primary		Lower secondary	
	Both sexes	Female	Both sexes	Female	Both sexes	Female
4	22,252	11,107				
5	21,414	11,223	60,655	30,264	-	-
6	10,125	5,743	5,91,452	2,86,015	-	-
7	-	-	5,88,120	2,83,895	-	-
8	-	-	5,65,301	2,74,367	-	-
9	-	-	5,65,642	2,73,807	-	-
10	-	-	5,23,630	2,52,418	45,237	23,791
11	-	-	2,04,127	84,386	1,06,958	55,225
12	-	-	87,157	31,760	3,66,851	1,89,539
13	-	-	39,262	12,524	4,98,359	2,50,649
14	-	-	-	-	-	-
15	-	-	-	-	-	-
Total	53,791	28,073	32,25,346	15,29,436	10,17,405	5,19,204

Population of Primary school Age
(6-10 Years):

Both sexes	Female
36,64,691	16,99,172

- Primary entrance age: 6
- Duration of primary: 5 years

Answer of the exercise

Indicators	Both sexes	Female
GER	88.0	90.0
NER	77.3	80.7
ANER	78.6	82.1
Total NER	78.8	82.4



SDG 4.1.3: Gross Intake Ratio to the Last Grade (GIRLG)



Total number of new entrants in the last grade of primary education, regardless of age, expressed as a percentage of the population at the **theoretical entrance age to the last grade of (e.g.) primary education**.

GIRLG combines two dimensions: it addresses whether or not the entire eligible school age population has **access** to school and whether or not they **complete** the full cycle.

Often used as a proxy for completion rate.

$$\text{GIRLG} = \frac{\text{Number of new entrants to the last grade of primary education}}{\text{Population of the theoretical entrance age to the last grade of primary education}} \times 100$$



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).



SDG 4.1.2: Completion rate



The percentage of a cohort of children or young people **aged 3-5 years above the intended age for the last grade** of each level of education who have completed that grade.

Population aged 3 to 5 years above the entrance age into the last grade of a level of education, who completed that level

Formula:
$$\frac{\text{Population aged 3 to 5 years above the entrance age into the last grade of a level of education, who completed that level}}{\text{Population aged 3 to 5 years above the official entrance age into the last grade of a level of education}} \times 100$$

Primary Completion rate:
$$\frac{11+3- 11+5 \text{ years age who completed primary level}}{14-16 \text{ years population}} \times 100$$

There is a possibility to calculate completion rate from administrative data as well (<https://emis.uis.unesco.org/operational-guide/>)



The indicator is calculated using population censuses or household surveys (attendance data).

Example+Exercise

Open sheet 1 and Sheet 2

Grade	2013	2014	2015
Grade 1	690,103	677,269	687,484
Grade 2	660,770	665,757	650,493
Grade 3	680,648	657,302	658,140
Grade 4	689,653	680,042	654,686
Grade 5	705,872	701,921	677,311
Grade 6	705,872	689,568	682,718
Grade 7	773,792	810,469	737,192
Grade 8	853,029	825,288	784,169
Grade 9	819,988	789,509	787,570

- It is assumed that the entrance age to Grade 1 is 6 years old.
- primary education lasts 5 years until the end of Grade 5.
- The total population *at the age of 10* is 715,900 in 2015.
- **Total number of repeaters in Grade 5 in 2015 = 8,900**

GIRLG (primary) for 2015 = ??

$$93.4\% = \frac{677,311 - 8,900}{715,900} \times 100$$

SDG 4.1.2: Completion rate

Official primary education entry age:

- **6 years age**

Education structure:

- Primary: 6 years
- Lower Sec.: 3 years
- Upper Sec. – 3 years

Calculate the *completion rate* for each **basic education** level

Age	No school	Number of people who completed education by level (from attainment data in household surveys)										Total
		Preschool	Primary	Lower secondary	Upper secondary	Technical vocational	Diploma (short cycle)	Bachelor	Master	Doctorate	DK	
9	64	28	4268	0	0	0	0	0	0	0	0	4360
10	87	36	11478	2374	0	0	0	0	0	0	0	13975
11	198	0	13288	616	0	0	0	0	0	0	0	14102
12	232	24	4812	9324	0	0	0	0	0	0	12	14404
13	232	13	1079	14664	13	0	0	0	0	0	0	16001
14	123	14	1092	16212	560	168	0	0	0	0	0	18169
15	432	0	1515	6480	7410	2520	0	0	0	0	0	18357
16	342	0	1792	3952	9744	2512	0	16	0	0	32	18390
17	435	17	1615	4777	9078	2975	221	255	0	0	0	19373
18	342	36	2016	5166	3942	1710	1206	2340	0	0	36	16794
19	654	0	1938	4940	3021	1444	1672	3002	0	0	38	16709
20	775	0	2180	6500	3140	1340	1680	3520	0	0	120	19255
21	345	0	2478	6657	3150	1176	1722	3591	0	0	42	19161
22	453	0	3080	5566	3652	1100	1452	4268	44	0	22	19637
23	432	0	2783	6210	3749	1495	1610	4071	23	0	0	20373
24	342	0	2856	7248	4680	2088	2184	4848	264	0	0	24510
25	233	0	4550	7650	5150	1175	2050	5125	200	0	75	26208
26	897	0	5070	6162	5590	1586	2236	6292	234	52	52	28171
27	879	0	5751	6642	6102	1755	3402	6237	351	27	54	31200
28	1092	0	5684	7812	5852	1820	3892	7056	616	28	28	33880
29	2342	0	6815	8178	6989	1972	3567	8004	1015	0	87	38969
30	3425	0	7290	8640	8040	2700	4020	9150	720	30	0	44015

SDG 4.1.2: Completion rate

Population aged 3 to 5 years above the entrance age into the last grade of a level of education, who completed that level

Formula: $\frac{\text{Population aged 3 to 5 years above the entrance age into the last grade of a level of education who completed that level}}{\text{Population aged 3 to 5 years above the official entrance age into the last grade of a level of education}} \times 100$

Age	No school	Number of people who completed education by level (from attainment data in household surveys)										Total	
		Preschool	Primary	Lower secondary	Upper secondary	Technical vocational	Diploma (short cycle)	Bachelor	Master	Doctorate	DK		
9	64	28	4268	0	0	0	0	0	0	0	0	0	4360
10	87	36	11478	2374	0	0	0	0	0	0	0	0	13975
11	198	0	13288	616	0	0	0	0	0	0	0	0	14102
12	232	24	4812	9324	0	0	0	0	0	0	0	12	14404
13	232	13	1079	14664	13	0	0	0	0	0	0	0	16001
14	123	14	1092	16212	560	168	0	0	0	0	0	0	18169
15	432	0	1515	6480	7410	2520	0	0	0	0	0	0	18357
16	342	0	1792	3952	9744	2512	0	16	0	0	0	32	18390
17	435	17	1615	4777	9078	2975	221	255	0	0	0	0	19373
18	342	36	2016	5166	3942	1710	1206	2340	0	0	0	36	16794
19	654	0	1938	4940	3021	1444	1672	3002	0	0	0	38	16709
20	775	0	2180	6500	3140	1340	1680	3520	0	0	0	120	19255
21	345	0	2478	6657	3150	1176	1722	3591	0	0	0	42	19161
22	453	0	3080	5566	3652	1100	1452	4268	44	0	0	22	19637
23	432	0	2783	6210	3749	1495	1610	4071	23	0	0	0	20373
24	342	0	2856	7248	4680	2088	2184	4848	264	0	0	0	24510
25	233	0	4550	7650	5150	1175	2050	5125	200	0	0	75	26208
26	897	0	5070	6162	5590	1586	2236	6292	234	52	0	52	28171
27	879	0	5751	6642	6102	1755	3402	6237	351	27	0	54	31200
28	1092	0	5684	7812	5852	1820	3892	7056	616	28	0	28	33880
29	2342	0	6815	8178	6989	1972	3567	8004	1015	0	0	87	38969
30	3425	0	7290	8640	8040	2700	4020	9150	720	30	0	0	44015

Primary: $98.3\% = \frac{53973}{54916} \times 100$

Lower secondary: $86.5\% = \frac{45749}{52876} \times 100$

Upper secondary: $51.4\% = \frac{29835}{58053} \times 100$

SDG 4.1.4: Out-of-school rate

SDG 4.1.5: Out-of-school rate (primary, lower secondary, upper secondary)

Children and young people in the official age range for the given level of education who are not enrolled in Pre-primary, primary, secondary or higher levels of education. Children and young people who are enrolled in pre-primary education are **not** considered to be out-of-school.

$$\text{OOSN} = \frac{\text{Total population of the official age group for given level} - \text{The number of students of the official age enrolled in Pre-primary, primary and secondary and above}}{\text{Total population of the official age group for the same education level}} \times 100$$



The indicators can be calculated using administrative data (enrolment) or household surveys (attendance data).

$$\text{OOSR (Pri)} = \frac{\text{Total population of the 6-11 year age} - \text{The number of students of 6-11 years age enrolled all levels of education}}{\text{Total population of the 6-11 years age}} \times 100$$



- High level of rate shows the government is not available to fulfill its commitment towards education for all
- Useful indicator to develop strategies to bring and retain children in school
- Develop alternative programmes

SDG 4.1.5: Over-age students



The percentage of pupils in each level of education (primary and lower secondary) who are at least 2 years above the intended age for their grade.

$$\% \text{ of over-age children} = \frac{\text{Sum of the pupils who are at least 2 years above the intended age in each grade for a level of education}}{\text{Population of official age for the same level of education}} \times 100$$



The indicators can be calculated using administrative data (enrolment) or household surveys (attendance data).

Example

Open sheet 3 and 4

Age	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
5	47526								
6	69456	48213							
7	69456	48213	23478						
8	2487	62796	44781	10078					
9	1240	5678	67435	45123	34789				
10	402	1412	4897	74589	48473	1423			
11		867	432	4188	67456	48771	2178		
12		78	56	456	3423	74899	34112	1007	
13				12	130	4115	81189	32778	230
14					1	1893	4563	89712	35678
15						746	1124	1896	84130
16						80	889	247	1784
17							70		89
18									
Total over-age	4129	8035	5385	4656	3554	6834	6646	2143	1873

- The primary entry age is 6 years
- The official age range is therefore when entering primary education at Grade 1 no older than 7 years

$$\begin{aligned}
 \% \text{ OAC} = & \frac{\text{Sum of the pupils who are} \\
 & \text{at least 2 years above the intended age} \\
 & \text{in each grade for a level of education}}{\text{Total enrolled population of official age} \\
 & \text{for the same level of education}} \times 100
 \end{aligned}$$

Example (primary)

Age	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
5	47526								
6	69456	48213							
7	69456	48213	23478						
8	2487	62796	44781	10078					
9	1240	5678	67435	45123	34789				
10	402	1412	4897	74589	48473	1423			
11		867	432	4188	67456	48771	2178		
12		78	56	456	3423	74899	34112	1007	
13				12	130	4115	81189	32778	230
14					1	1893	4563	89712	35678
15						746	1124	1896	84130
16						80	889	247	1784
17							70		89
18									
Total Enrollment	190567	167257	141079	134446	154272	131927	124125	125640	121911

787621

- The primary entry age is 6 years; at most 7.
- As of Grade 1, 8 years and older counts as over-age, increasing by one year-step with every grade

$$3.27\% = \frac{25759}{787621} \times 100$$

Sum of the pupils who are at least 2 years above the intended age *in each grade* for a *level of education*

$$\% \text{ OAC} = \frac{\text{Sum of the pupils who are at least 2 years above the intended age in each grade for a level of education}}{\text{Total enrolled population of official age for the same level of education}} \times 100$$

Example (lower secondary)

Age	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
5	47526								
6	69456	48213							
7	69456	48213	23478						
8	2487	62796	44781	10078					
9	1240	5678	67435	45123	34789				
10	402	1412	4897	74589	48473	1423			
11		867	432	4188	67456	48771	2178		
12		78	56	456	3423	74899	34112	1007	
13				12	130	4115	81189	32778	230
14					1	1893	4563	89712	35678
15						746	1124	1896	84130
16						80	889	247	1784
17							70		89
18									
Total over-age	4129	8035	5385	4656	3554	6834	5138	2143	1873

- The primary entry age is 6 years
- The duration of primary is 6 years
- As of Grade 6, pupils should be 12 or 13 years
- As of Grade 6, 14 years and older counts as over-age, increasing by one year-step with every grade

$$1.02\% = \frac{5138}{503603} \times 100$$

Sum of the pupils who are at least 2 years above the intended age *in each grade* for a *level of education*

$$\% \text{ OAC} = \frac{\text{Sum of over-age pupils}}{\text{Total enrolled population of official age for the same level of education}} \times 100$$

503603

Total enrolled population of official age for the same level of education



SDG 4.2.4: Gross early childhood education enrolment ratio in pre-primary education and early childhood educational development

Gross early childhood education (**ISCED 0**) enrolment ratio in pre-primary education (PPE) and early childhood educational development (ECED)

Total enrolment in (a) pre-primary education (**ISCED 02**) and (b) early childhood educational development (**ISCED 01**) regardless of age expressed as a percentage of the population of the official age for early childhood education.

$$\text{GER} = \frac{\text{Number of pupils enrolled in ECED and PPE}}{\text{Total population of official age for both ECED and PPE}} \times 100$$



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).



SDG 4.2.2: Participation rate in organized learning (one year before the official primary entry age)

The number of children aged one year before the official entrance age to primary education who participate in an organized learning programme, including programmes which offer a combination of education and care, expressed as a percentage of the corresponding population of that age. The age range will vary by country depending on the official age for entry to primary education.

$$\text{Participation rate} = \frac{\text{Number of children aged one year below the official primary entrance age who participate in an organized learning programme}}{\text{Total number of children of the official age one year before for pre-primary education}} \times 100$$



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).

SDG 4.3.1: Participation rates in education and training (in the last 12 months)

The percentage of youth and adults in a given age range (e.g. 15-24 years, 25-64 years etc.) participating in formal or non-formal education or training in a given time period (e.g., last 12 months).

$$\text{Participation rate} = \frac{\text{Number of youth and adults (aged e.g. 15-24 or 25-64) participating in an education or training (during e.g. the last 12 months)}}{\text{Total population of the same age group}} \times 100$$



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).

Gross enrolment ratio for tertiary education

SDG 4.3.2: Gross enrolment ratio for tertiary education

Total enrolment in tertiary education (ISCED 5, 6, 7 and 8) regardless of age expressed as a percentage of population in the 5-year age group immediately following upper secondary education.

$$\text{GER (TE): } \frac{\text{Total enrolled students in tertiary education regardless of age}}{\text{Population of official age for tertiary education}} \times 100$$

Note: The population of the official age for tertiary education is estimated to be **the 5-year age group immediately following upper secondary education.**



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).

Example

Country Population			
Age	female	male	both
17	3,580	8,420	12,000
18	3,936	4,064	8,000
19	802	1,198	2,000
20	8,296	7,704	16,000
21	2,488	3,512	6,000
22	4,412	6,588	11,000
23	4,211	5,789	10,000
24	4,001	3,999	8,000
25	2,001	4,999	7,000
26	3,000	3000	6,000
27	2,757	2243	5,000

43000

Number of students enrolled in higher education programmes	
Short-cycle	2,345
Bachelor	10,231
Master	6,458
Doctoral	1,045

20079

- When primary entrance age is 6, the age of completing upper secondary education is intended with 17 years
- The age group relevant is therefore from 18 to 22 years old

$$46.7\% = \frac{20079}{43000} * 100$$

SDG 4.3.3: Participation rate in TVET

The percentage of young people aged 15-24 years participating in technical or vocational education either in formal education, work-based or other settings, on a given date or during a specified period.

$$\text{Participation rate} = \frac{\text{Number of 15-24-years-olds participating in TVET}}{\text{Total population aged 15-24 years}} \times 100$$

Open Sheet 5 and 6



The indicator can be calculated using administrative data (enrolment) or household surveys (attendance data).

4.c.7: Percentage of trained teachers

The number of school teachers by level of education taught who have received at least the minimum organized pedagogical teacher training pre-service or in-service required for teaching at the relevant level defined by the national authority

$$\text{Formula} = \frac{\text{Total number of teachers in a level of education who are trained}}{\text{Total number of teachers at that level}} \times 100$$

Note: This indicator should be calculated separately for public and private institutions.



The indicator is calculated using administrative data (enrolment).

SDG 4.c.4: Percentage of qualified teachers

The number of school teachers by level of education taught with at least the minimum academic qualifications required by the public authorities for teaching in their subjects at the relevant level.

$$\text{Formula} = \frac{\text{Total number of teachers in a level of education with at least the minimum academic qualifications}}{\text{Total number of teachers at that level}} \times 100$$

Note: This indicator should be calculated separately for public and private institutions.



The indicator is calculated using administrative data (enrolment).